

Claims

1. A VPO catalyst of the general formula:

[V₁P_aX_b(Y)_cO_d]_e[Z]_f, in which

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a = 0.1-2.5
b = 0-3.0, in particular 0.001-3.0
c = 0.1-10
d = depends on the valency of the other elements
10 e = 5-100 (% by weight)
f = 95-0 (% by weight), in particular 95-5 with the provision that b and f are not simultaneously 0

X = Cr, Mo, W, Fe, Ru, Co, Rh, Ir, Ni, Pd, Pt, Zn or Nb
Y = cyclic nitrogen compound,
15 Z = SiO₂, Al₂O₃, ZrO₂ or TiO₂ or their mixtures,
manufactured in accordance with a method in which one carries out the following steps:

- a) converting V₂O₅ and concentrated phosphoric acid in an organic medium under reflux conditions,
20 b) separating off catalyst precursor that forms and optionally
c) drying at 80 to 140°C,
d) impregnating the optionally dried catalyst precursor with an aqueous or alcoholic solution of the metal X, with X having the significance quoted above,
e) separating off excess solution,
25 f) drying and calcining the impregnated material, and
g) optionally forming the catalyst obtained.

2. The VPO catalyst in accordance with claim 1, characterized in that the catalyst contains SiO₂, Al₂O₃, ZrO₂ or TiO₂ or their mixtures as a support.
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3. The VPO catalyst in accordance with claim 1, characterized in that the catalyst contains 0.01 to 5 % by weight of an organic cyclic nitrogen compound.

4. The VPO catalyst in accordance with claim 3, characterized in that the catalyst contains as the nitrogen compound a compound selected from the group pyridine, quinoline, pyridazine, pyrimidine, and pyrazine.

5 5. The VPO catalyst in accordance with claim 3, characterized in that the catalyst contains 3-methylpyridine as the nitrogen compound.

6. A method of use of the catalyst in accordance with claims 1 to 5 for the manufacture of 3-cyanopyridine by conversion of 3-methylpyridine with ammonia
10 and oxygen at temperatures up to 440°C.